Reviewing social media use by clinicians

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ABSTRACT

Adoption studies of social media use by clinicians were systematically reviewed, up to July 26th, 2011, to determine the extent of adoption and highlight trends in institutional responses. This search led to 370 articles, of which 50 were selected for review, including 15 adoption surveys. The definition of social media is evolving rapidly; the authors define it broadly to include social networks and group-curated reference sites such as Wikipedia. Facebook accounts are very common among health science students (64—96%) and less so for professional clinicians (13—47%). Adoption rates have increased sharply in the past 4 years. Wikipedia is widely used as a reference tool. Attempts at incorporating social media into clinical training have met with mixed success. Posting of unprofessional content and breaches of patient confidentiality, especially by students, are not uncommon and have prompted calls for social media guidelines.

INTRODUCTION

Social media refers to 'software that enables individuals and communities to gather, communicate, share, and in some cases collaborate or play',[1] typically in the context of applications accessible through internet browsers or mobile devices ('apps'). The term overlaps loosely with both 'web 2.0' and 'social network sites'. The former refers to technologies that enabled interactive websites[2] and the latter to applications that enable users to establish digital connections to other users.[3] In this paper we use 'social media' as a catch-all term. Social media use by American adults nearly doubled from 26% in 2008 to 47% in 2011,[4] and has been linked to events as disparate as political revolutions,[5] a general shortening of attention span,[6] and the decline of print news media.[7] Some observers in the publishing industry have called social media the greatest revolution since Gutenberg's printing press.[8]

Social media has broadly affected medicine, perhaps most publicly by enabling increased communication with and among patients. Examples include emergency broadcasts during natural disasters,[9] access to free (but often questionable)[10 11] medical information online, and virtual patient communities.[12] Impact has also been felt internally as a new generation of clinicians enters training with ingrained communication habits unimagined by their predecessors,[13] and through social media websites specifically catering to clinician use, sometimes categorized under 'Medicine 2.0'.[14] Concerns about clinicians publicizing unprofessional content or breaching patient confidentiality are common,[15] with fears stoked by well-publicized incidents.[16] However, role models for responsible use are also very vocal.[17]

These trends have motivated research quantifying social media adoption and impact within clinician communities. In this paper we review articles focused on clinician adoption of social media. We also highlight prominent clinician-centric social media services, which have a substantial audience but whose impact has not been widely studied.

METHODS

Literature search

We searched the PubMed database using the terms 'social media', 'Facebook', and 'Twitter' for articles published up to 26 July 2011. We identified additional references by scanning reference lists. We intentionally used very focused keywords and a single database to avoid broadening the scope of this review beyond research written by and focused on clinician use of social media. Although we extended the review to articles referenced in the articles we found using this focused strategy, we acknowledge that this may have resulted in some false negatives. However, the increased specificity was important so we could complete this task before major changes in the environment would make the review obsolete.

Study selection

Retrieved studies were independently judged by MvM and a scientific consultant, DVM. Discrepancies were resolved through discussions between MvM, DVM, and LOM. We followed PRISMA guidelines to the extent that they were applicable to our systematic review (ie, primarily the items in the PRISMA checklist that related to selection of studies and their abstraction). The body of literature about social media in healthcare does not yet lend itself to meta-analyses of outcomes, which constitute a large portion of the PRISMA checklist items.

Inclusion criteria

We included articles published in peer-reviewed journals serving clinician communities, focused on clinician use of social media. We broadly define clinicians to include physicians, pharmacists, nurses, and dentists, including those at all stages of training, anywhere in the world.

Assessment of study quality

Standard definitions for what constitutes quality for social media sites were not found, presenting limitations to objective comparisons of study findings. In the interest of completeness, we included all articles independently judged by both reviewers to be scientifically credible and unbiased by commercial interests.

RESULTS

The literature search yielded 370 published articles. We selected 50 peer articles for further analyses.

Table 1 Published surveys of social media use by clinicians

Author, publication year*	Focus	Survey respondents†	Selected findings
Sandars, 2007[23]	Social media use	593 medical students, 160 doctors (Britain)	80.8% of medical students, 42.5% doctors use social media
Sandars, 2008[24]	Social media use	212 year medical students (Britain)	70% of medical students used social media
Thompson, 2008[25]	Facebook use	501 medical students, 312 residents	64.3% of medical students and 12.8% of residents use Facebook
Brokowski, 2009[26]	Wikipedia use	1056 pharmacists	35% use Wikipedia
Cain, 2009[27]	Facebook use	299 pharmacy students	88% use Facebook
Hughes, 2009[28]	Social media use during 5 days of clinical practice	35 junior physicians (Spain)	70% use Wikipedia
Garner, 2010[29]	Facebook use	56 undergraduate medical students (UK)	96% use Facebook
MacDonald, 2010[30]	Facebook use	338 junior physicians (New Zealand)	65% use Facebook
Metzger, 2010[31]	Student/faculty relationships on Facebook	95 faculty pharmacists	46% use Facebook, of which 79% refused to friend students
Alkhateeb, 2011[32]	Social media use	50 pharmacists	74% use YouTube 72% use Wikipedia 50% use Facebook
Baer 2011[33]	Facebook use	36 psychiatry residents	83% use Facebook
Giordano, 2011[34]	Facebook use	644 1st year medical students413 graduating medical students	77% 1st year students 80% graduating students use Facebook
González, 2011[35]	Social media use	44 pediatricians (Spain)	73% use Youtube 43% use Facebook 25% use blogs
Usher, 2011[36]	Social media use	935 health professionals (Australia)	36.3% use Facebook 9.5% use social media professionally
Wheeler, 2011[37]	Social media use	1000 plastic surgeons	46.7% use personally28.2% use professionally

*Ordered by publication year.
†Respondents American unless otherwise noted.

Included articles were categorized into five topic areas: overviews, adoption surveys, reference use, educational impact and use, and professional conduct. Because of the emerging nature of this research area, we are not aware of generally accepted pre-existing topical categories. These five categories thus represented our best attempt to subdivide the most compelling and relevant publications we found into mutually exclusive and exhaustive categories.

Overviews

We found many social media overviews and perspectives in journals targeting multiple disciplines.[18] Authors promote the need for awareness, note potential applications or personal experiences, and caution against pitfalls (discussed below). Terminology is not standardized, with the terms 'social media', 'social network', 'social network service', and 'web 2.0' often used interchangeably, and their application to medicine sometimes referred to as 'Medicine 2.0'.[14]

Rapid evolution in the commercial landscape quickly dates discussions of commercial services. For example, in 2008, Facebook (then at 19 million users) was 'youth-oriented', and MySpace was mentioned as a dominant force with 60 million users.[19] Recent overviews no longer mention MySpace, which has fallen from mainstream acceptance. Instead, recent attention has focused on Facebook, Youtube, and Twitter, which have shown rapid growth and self-reported user bases of 750 million,[20] 300 million,[21] and 200 million,[22] respectively. Wikipedia is frequently overlooked as a social media website.

Adoption surveys

We identified 15 studies reporting adoption surveys of social media use (table 1). One survey was conducted at a conference[32] and the rest were conducted online, with participants recruited through email lists. Surveyed populations included medical students, pharmacy students, junior physicians, residents, pharmacists, plastic surgeons, psychiatrists, and pediatricians. The most common metric surveyed was the use of Facebook, in which use was defined as the responder having a personal account. Students showed generally high use, (64–96%) and professionals showed lower use (12.8–46.7%). We did not attempt a meta-analysis of pooled data because surveyed populations were disparate in age, career level, and field.

Reference use

Wikipedia[38 39] is highly used by clinicians as a source of reference materials, despite known shortcomings in breadth and occasional errors,[10 11] owing to prominent results in Google searches for medical topics.[40] For example, Hughes *et al*[28] found that 70% of 35 junior physicians used Wikipedia to find medical information during a week-long period, and 93% cited ease of use as a primary motivation. Brokowski[26] found 35% of 1056 surveyed pharmacists used Wikipedia, although in an apparent conflict, only 19% of those said they trusted it.

We found multiple projects that sought to emulate Wikipedia's success in crowd-sourcing useful medical content, while additionally emphasizing editorial credibility by verifying credentials of contributors.[41] These include RadiologyWiki, announced in 2007.[42] and currently dormant, and Medpedia, which launched in 2009 with substantial institutional backing.[39] We did not find articles reporting success metrics for these projects or similar ones.

Educational impact and use

Social media presents new communication capabilities that may be leveraged to improve clinical education.[43 44] The overwhelming use of social media by clinicians falling into the youngest demographical segments—the adoption rate for 18–29 year olds in the general population is 86%[45]—has motivated adapting clinical curriculums to reflect the changing culture of incoming

students.[46] Wood and Struthers[47] advises that Wikipedia can be an important learning tool if used in combination with other learning materials. Kim *et al*[48] challenged his specialty community to improve Wikipedia's coverage, and to establish wiki-based curricula. On the other hand, Pender *et al*[49] found Wikipedia unsuitable for medical student use, because of a lack of depth and some factual errors, compared with three traditionally edited services such as UpToDate.

Courses specifically designed to incorporate social media tools have been positively received by students in some cases,[50 51] although backlashes have been reported by students who felt that educators employing Facebook were improperly intruding into their social lives.[13 52 53] After experimenting with classroom Twitter use by students, Fox and Varadarajan[54] noted the challenge of balancing the utility of communication opportunities with the downsides of increased distraction.

In conversations with clinical students, an often mentioned website was the non-profit Student Doctor Network, which claims 300 000 registered profiles and one million unique monthly visitors.[55] Student Doctor Network's forums focus on clinical career topics, do not support detailed user profiles or subscriptions (friending), and encourage anonymity. It is unclear how many of its visits are from preclinical students compared with those already enrolled in clinical training.

Professional conduct

Concerns regarding social media use by clinicians frequently center on the potential for negative repercussions from breaching patient confidentiality[56] or publicizing unprofessional content.[57] This can be especially troublesome for incoming students,[13] who bring established social media habits and digital 'footprints'[58] to clinical programmes. Garner and O'Sullivan[29] found 52% of undergraduate medical students admitted to having photos on Facebook that they considered embarrassing. Cain *et al*[27] report that male pharmacy students view Facebook as a social domain separate from their professional lives. Weinstein *et al*[59] note that generational trends imply an upcoming sixfold increase in social media use by the next generation of physicians, and that inappropriate use could pose a serious threat to the standing of the medical profession.

To quantify this threat, several studies have systematically examined social media content produced by clinicians. In 2006, Lagu *et al*[60] examined 271 medical blogs and found that most blogs had sufficient information to reveal author identities (56.8%), and many contained sufficient information for patients to identify their doctors or themselves (16.6%). More recently, Clauson *et al*[61] examined 44 pharmacist blogs, and found high rates of anonymity (68.2%) and negative language describing patients (57%). In 2009, Chretien *et al*[62] polled US medical school administrators and found 60% reported incidents in which students exhibited unprofessional conduct, and 13% reported violations of patient confidentiality. In 2011, Chretien *et al*[63] analyzed 5156 tweets from 260 self-identified physicians on Twitter over 1 month, and found that 4% were potentially unprofessional, including 38 potential patient privacy violations. Thompson *et al*[64] analyzed 1023 Facebook profiles from medical students and residents, and found 12 instances of potential patient privacy violations, all of which occurred on trips to developing countries. These suggest the need for social media training,[65] but Kind *et al*[66] reported in mid-2010 that only 13 of America's 132 medical schools had explicit social media guidelines.

Guseh *et al*[67] focused on the patient–physician relationship on Facebook, and proposed four guidelines for physicians: (1) avoid accepting patient friend requests; (2) avoid adding private information gathered online to a patient's medical records; (3) restrain from disclosing personal information online; and (4) understand privacy settings to ensure that content meant for private access does not becomes public. Leiker[68] additionally suggested establishing dual online identities, separating personal and professional activities, a recommendation also proposed by Mostaghimi and Crotty.[69] Metzger *et al*[31] noted that the appropriateness of student–faculty friending also raises new ethical questions.

DISCUSSION

This systematic review identified 50 publications covering social media adoption by clinicians. We limited our search to PubMed to review literature aimed at clinician audiences, but this may have excluded relevant articles indexed in non-medical databases. Fifteen articles contained adoption surveys, but the lack of standard definitions and methodologies prevented us from performing meta-analyses. We found five studies that evaluated publicly accessible social media content created by clinicians, but their focus on multiple services prevented direct comparisons. The rest of the articles were qualitative and observational.

Reported use of Facebook and Wikipedia was high, but the extent and impact of use was not thoroughly characterized. We propose that future social media studies include usage metrics such as the amount and type of content produced and consumed, and the number of connections (Facebook 'friends' or Twitter's asymmetric 'follows') to other clinicians, patients, or students.

Interest in this area is increasing, as demonstrated by the number of survey articles published in each of the past 5 years: one (2007), two (2008), three (2009), three (2010), and six (January–July 2011). A more coherent picture of the field will emerge when terminology, assessment methods, and research objectives are widely accepted. This has been especially challenging in the backdrop of rapidly changing cultural and commercial trends.

Authors frequently call for official guidelines to guide clinician use of social media,[13 70] and an updated list is maintained by Bennett.[71] The American Medical Association adopted an official policy in November 2010,[72] which notes the positive potential of social media use by clinicians but emphasizes specific activities to avoid.

Although it is clear that some clinicians use social networks in their professional activities and respect for privacy is of concern to everyone, whether social media will become a critical part of healthcare or remain an 'adjunct' technology is still unclear. There are several examples in which technology that would seem to be justifiably needed (eg, personal health records) has not yet become fully adopted. Social media in the clinical context may fall into this category. It will take several years to understand the effects of social media in clinician behavior and on patient outcomes.

CONCLUSION

Social media use by clinicians is widespread, especially by younger clinicians for personal and reference purposes. Awareness and interest is evident across multiple disciplines, as are concerns regarding the potential for misuse. Efforts to quantify the impact of social media are in their infancy, as demonstrated by the lack of widely used terminology and research methods. Further studies are necessary to characterize use better, define training requirements, and discover what, if any, uses for social media will be appropriate in clinical training.

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